

## C. ADDITIONAL MANAGEMENT MEASURES-FORESTRY

**PURPOSE OF MANAGEMENT MEASURE:** The purpose of this management measure is to identify additional management measures necessary to achieve and maintain applicable water quality standards and protect designated uses for land uses where the 6217(g) management measures are already being implemented under existing nonpoint source programs but water quality is still impaired due to identified non-point sources.

**CONDITIONS FROM JANUARY 1998 FINDINGS:** Within two years, Oregon will identify and begin applying additional management measures where water quality impairments and degradation of beneficial uses attributable to forestry exist despite implementation of the 6217(g) measures (1998 Findings, Section X)

**FINDING:** Oregon has not satisfied this condition. By not satisfying the additional management measure for forestry, Oregon has failed to submit an approvable program under CZARA.

**RATIONALE:** In the 1998 conditional approval findings, NOAA and EPA called out specific concerns with the ability of Oregon's existing FPA rules to adequately address road density and maintenance, particularly on so-called "legacy" roads, to attain water quality standards and protect designated uses. In the rationale, NOAA and EPA noted that "'legacy' roads, roads constructed and used prior to adoption of the FPA in 1971 and not used or maintained since, were not required to be treated and stabilized before closure. In some locations, this has resulted in significantly altered surface drainage, diversion of water from natural channels, and serious erosion or landslides."

Oregon has established both regulatory and voluntary measures to address road-associated pollutant impacts to water quality, and has suggested that further additional management measures for roads are not necessary at this time. While NOAA and EPA acknowledge the progress the State has made, as discussed further below, the federal agencies maintain that additional work is needed to ensure the State has adequate additional management measures in place for forestry roads, including legacy roads.

Since 1998, the Board of Forestry has made several improvements to general road maintenance measures to improve water quality. Changes made in 2002 and 2003, included: (1) establishment of a "Critical Locations" Policy for avoiding the building of roads in critical locations such as high hazards landslide areas, steep slopes, or within 50 feet of waterbodies; (2) creation of additional rules to address wet-weather hauling (OAR 629-625-0700), and (3) revision of an existing road drainage rule to reduce sediment delivery (OAR 629-625-0330). These improvements will help reduce sedimentation from roadways. However, the new drainage requirements are triggered only when new road construction or re-construction of existing roads occurs. The rule changes and new policies do not sufficiently address water quality problems associated with "legacy roads" (e.g., roads that do not meet current state requirements with respect to siting, construction, maintenance, and road drainage) or problems associated with a large portion of the existing road network where construction or reconstruction is not proposed.

Oregon proposed to address these legacy road issues and gaps in its FPA rules through voluntary efforts, including restoration and monitoring activities carried out through the voluntary Oregon Plan. For example, in its March 2014 submittal, the State described ODF's

voluntary Road Hazard and Identification and Risk Reduction Project where private and state forestland owners survey their road networks to identify roads that pose risks to salmonid habitat and prioritize roads for remediation. Although Oregon reports that thousands of road miles have been inspected and repaired across the state since the inception of this program in 1997, the State did not indicate the impact the program has had within the coastal nonpoint program management area or how many of these projects addressed active forest roads and roads retired according to current FPA practices versus problems associated with older, legacy roads.

Oregon also noted it has entered into a cooperative agreement with the USDA Forest Service to update the State's geographic information system (GIS) data layer for forest roads. The data layer will help the State conduct a rapid road survey to evaluate and prioritize road risks to soil and water resources. Oregon noted it hoped to begin the survey in 2014. NOAA and EPA encourage the State to move forward with the road survey. However, the federal agencies are not aware if the survey and GIS layer will consider legacy roads or how the state will use the data to direct future management actions.

In addition, the State also discussed it was undertaking a third-party audit in 2014 to assess compliance with the FPA rules governing forest road construction and maintenance among other things. While NOAA and EPA encourage the State to continue to conduct this and other audits to assess compliance with FPA rules, as noted earlier, legacy roads are not subject to FPA rules. Issues resulting from legacy roads would not be observed during this audit unless those roads are subject to construction or reconstruction that would trigger the need to comply with the FPA.

The NOAA and EPA recognize that legacy roads are being addressed through voluntary measures, and that legacy roads have been the target of significant landowner investment. However, as noted in the Oregon Coastal Coho Assessment,<sup>1</sup> old roads make up the majority of forest roads, and road inventory data on private land is not widely available. As such, it is not possible to determine the extent to which voluntary efforts have addressed the sedimentation problems and landslide risk posed by the legacy road network.

In addition, as the federal agencies' *1998 Final Administration Changes Memo* states, in order for states to rely on voluntary programs to meet coastal nonpoint program requirements, a state must, among other things: (1) describe the voluntary program, including the methods for tracking and evaluating those programs, the State will use to encourage implementation of the management measures; and (2) provide a legal opinion from its Attorney General asserting the State has adequate back-up enforcement authority for the voluntary measures and commit to exercising the back-up authority when necessary. While the State has provided the federal agencies with a legal opinion detailing the suitability of its back-up authorities, the State has not provided (either in writing or through past practice) a commitment to exercise its back-up authority to require implementation of the additional management measures for forestry roads, as needed. Also, the State has not described specifically how these voluntary efforts have and will continue to address legacy road issues within the coastal nonpoint management area. Nor has the State fully described how it continues to monitor and track the implementation of these measures to address forestry

---

<sup>1</sup> Nicholas J., McIntosh, B. and E. Bowles. 2005. Oregon Coastal Coho Assessment. Coho Assessment Part 3B. Oregon Watershed Enhancement Board and Oregon Department of Fish and Wildlife, Salem, Oregon. 49 pp.

road issues, including legacy roads (not just through one-time compliance audits but through more routine monitoring practices).

Legacy roads remain an issue due to their location and construction. Historic settlement patterns and relative ease-of-construction led early developers to preferentially locate roads in valley bottoms near streams. These roads would often parallel low gradient streams (historically the most productive coho habitat) and cross many tributaries.<sup>2</sup> Prior to modern best management practices, mid-slope roads would often be connected to these valley bottom roads to access harvest units.<sup>3</sup> It is widely recognized that these poorly designed forest roads increase sediment supplied to streams by altering hillslope hydrology, surface runoff, and sediment flux.<sup>4,5,6,7,8</sup> These roads can also become a chronic source of low level sediment over time.<sup>9</sup> The ecological consequences of sediment chronically supplied from roads may be equally or even more detrimental over time than periodic sediment pulses.<sup>10</sup> Furthermore, legacy roads can serve as initiation points for landslides many years (or even decades) after construction.<sup>11</sup> For example, one study found that forestry roads in Oregon built before 1984, have higher landslide rates than those built later.<sup>12</sup>

While ODF's 2002 Sufficiency Analysis found that, except for wet weather road use which the Board has since addressed (see above), complying with the current FPA road best management practices is likely to meet water quality standards, the analysis did not examine the impacts of legacy roads which do not adhere to current forest practices. Oregon's Independent Multidisciplinary Science Team (IMST) did find that:

“Old roads and railroad grades’ on forestlands, sometimes called legacy roads, are not covered by the OFPA rules unless they are reactivated for a current forestry operation or purposes. IMST believes the lack of a mechanism to address the risks presented by such roads is a serious impediment to achieving the goals of the Oregon Plan. A process that will result in the stabilization of such roads is needed, with highest priority

---

<sup>2</sup> Nicholas J., McIntosh, B. and E. Bowles. 2005. Oregon Coastal Coho Assessment. Coho Assessment Part 1: Synthesis. Oregon Watershed Enhancement Board and Oregon Department of Fish and Wildlife, Salem, Oregon. 69 pp.

<sup>3</sup> Wemple, B.C., Swanson, F.J., Jones, J.A., 2001. Forest roads and geomorphic process interactions, Cascade range, Oregon. *Earth Surface Processes and Landforms* 26, 191-204

<sup>4</sup> Reid, L. M., Dunne, T., 1984. Sediment production from forest road surfaces. *Water Resources Research* 20(11), 1753-1761.

<sup>5</sup> Luce, C.H., Black, T.A., 1999. Sediment production from forest roads in western Oregon. *Water Resources Research* 35(8), 2561-2570

<sup>6</sup> Wemple, B.C., Jones, J.A., 2003. Runoff production on forest roads in a steep, mountain catchment. *Water Resources Research* 39, doi:10.1029/2002WR001744

<sup>7</sup> Skaugset, A. and M. M. Allen. 1998. Forestry Road Sedimentation Drainage Monitoring Project for Private and State Lands in Western Oregon. Prepared for the Oregon Department of Forestry by the Forestry Engineering Department, Oregon State University, February 20, 1998.

<sup>8</sup> Robison, E.G., Mills K., Paul, J. Dent, L. and A Skaugset. 1999. Storm Impacts and Landslides of 1996: Final Report, Forest Practices Technical Report, vol. 4 Oregon Department of Forestry, Corvallis. 145 pp.

<sup>9</sup> MacDonald, L.H. and D.B.R. Coe. 2008. Road sediment production and delivery: processes and management. *Proceedings of the First World Landslide Forum, International Programme on Landslides and International Strategy for Disaster Reduction*, United Nations University, Tokyo, Japan. pp. 381-384.

<sup>10</sup> Detenbeck, N.E., P.W. Devore, G.J. Niemi, and A. Lima. 1992. Recovery of temperate stream fish communities from disturbance: a review of case studies and synthesis of theory. *Environ. Manage.* 16:33-53.

<sup>11</sup> Oregon Department of Forestry and Oregon Department of Environmental Quality. 2002. Sufficiency Analysis: A Statewide Evaluation of Forest Practices Act Effectiveness in Protecting Water Quality, Oregon Department of Forestry and Oregon Department of Environmental Quality. October 2002.

<sup>12</sup> Oregon Department of Forestry and Oregon Department of Environmental Quality. 2002. Sufficiency Analysis: A Statewide Evaluation of Forest Practices Act Effectiveness in Protecting Water Quality, Oregon Department of Forestry and Oregon Department of Environmental Quality, p. 33, Sessions, 1987.

attention to roads in core areas, but with attention to such roads and railroad grades at all locations on forestlands over time.”<sup>13</sup>

As part of the development process for the Coastal Salmon Restoration Initiative (CSRI) report, which later evolved in to the Oregon Plan for Salmon and Watershed (Oregon Plan), a 1996 National Marine Fisheries Service (NMFS) memo providing the service’s scientific analysis of the draft CSRI report identifies the report’s omission of forestry road-related problems as a serious inadequacy. NMFS indicated that the forest practice rules have no well-defined process to identify problems with older logging roads and railroad grades constructed prior to 1994.<sup>14</sup>

In addition to water quality impacts, sedimentation and erosion from forestry roads have adverse impacts on salmon. For example, logging roads are a source of fine sediments which enter spawning gravel and can lower the success of spawning and recruitment for coho salmon.<sup>15</sup> NOAA National Marine Fisheries Services’ scientific analysis for their Endangered Species Act Section 7 listing for Oregon Coast Coho Salmon, also continues to recognize forestry roads, including legacy roads, as a source of sediment and a threat to Oregon coastal coho salmon. NMFS explained that “existing and legacy [forestry] roads can contribute to continued stream degradation over time through restriction of debris flows, sedimentation, restriction of fish passage, and loss of riparian function.”<sup>16</sup>

Despite the improvements the State has made in addressing forestry roads, NOAA and EPA remain concerned that many forest road networks in Oregon continue to deliver sediment into streams. Oregon notes that some legacy roads may have filled in with trees and other vegetation since being retired from active use and that accessing some of these roads to repair them properly may create more disturbance and potential water quality impacts. While this statement may be accurate in some cases, the State did not provide legacy roads inventory data of the coastal area to support its position. An inventory of all legacy roads and old roads (roads built prior to the 1983 rule changes<sup>17</sup>) would identify the location of the legacy roads, identify where impairments are needed and provide information on effectiveness of any improvements made via its voluntary roads improvement program.

The suite of voluntary programs Oregon has described may enable the State satisfy the forestry roads element of this condition. However, as discussed above, additional information is needed at this time. The federal agencies encourage the State to provide a commitment to use its back-up authority to ensure implementation of the forestry road

---

<sup>13</sup> Independent Multidisciplinary Science Team. 1999. Recovery of Wild Salmonids in Western Oregon Forests: Oregon Forest Practices Act Rules and the Measures in the Oregon Plan for Salmon and Watersheds. Technical Report 1999-1 to the Oregon Plan for Salmon and Watersheds, Governor’s Natural Resources Office, Salem, Oregon. pp. 47

<sup>14</sup> NOAA National Marine Fisheries Service. 1996. “Analysis of the Oregon Department of Forestry’s (ODF) Most Recent Submission for the State of Oregon’s Coastal Salmon Restoration Initiative”. September 10, 1996 memo from Rowan Baker to Steve Morris and Elizabeth Garr.

<sup>15</sup> Cederholm, C.J., Reid, L.M., Salo, E.O. 1980. “Cumulative Effects of Logging Road Sediment on Salmonid Populations in the Clearwater River, Jefferson County, Washington,” Contribution No. 543, College of Fisheries, University of Washington, Seattle, Washington 98195.

<sup>16</sup> NOAA National Marine Fisheries Service. 2012. Scientific Conclusions of the Status Review for Oregon Coast Coho Salmon (*Oncorhynchus kisutch*). NOAA Technical Memorandum NMFS-NWFSC-118, June 2012. Pg. 78 [http://www.nwfsc.noaa.gov/assets/25/1916\\_08132012\\_121939\\_SROregonCohoTM118WebFinal.pdf](http://www.nwfsc.noaa.gov/assets/25/1916_08132012_121939_SROregonCohoTM118WebFinal.pdf)

<sup>17</sup> Report of the AD HOC Forest Practices Advisory Committee on Salmon and Watersheds to The Oregon Board of Forestry, August 2000. Section B-Forestry Roads, p. B-17.

additional management measures, when needed and to move forward with establishing a road survey or inventory program that considers both active, inactive, and legacy roads, including a mechanism for tracking and monitoring implementation of these voluntary measures to carry out identified priority forest road improvements. To support an approvable coastal nonpoint program, the program should establish, among other things, a timeline for addressing priority road issues, including retiring or restoring forest roads that impair water quality, and a reporting and tracking component to assess progress for remediating identified forest road problems. Establishing a roads inventory with appropriate reporting metrics would provide valuable information on State and private landowner accomplishments to improve and repair roads and identify where further efforts are needed. Such an approach could help verify whether the combination of current rules and the Oregon Plan's voluntary measures are effective in managing forest roads to protect streams on a reasonable timeframe.

C. ADDITIONAL MANAGEMENT MEASURES-FORESTRY

**PURPOSE OF MANAGEMENT MEASURE:** The purpose of this management measure is to identify additional management measures necessary to achieve and maintain applicable water quality standards and protect designated uses for land uses where the 6217(g) management measures are already being implemented under existing nonpoint source programs but water quality is still impaired due to identified non-point sources.

**CONDITIONS FROM JANUARY 1998 FINDINGS:** Within two years, Oregon will identify and begin applying additional management measures where water quality impairments and degradation of beneficial uses attributable to forestry exist despite implementation of the 6217(g) measures (1998 Findings, Section X)

**FINDING:** Oregon has not satisfied this condition. By not satisfying the additional management measure for forestry, Oregon has failed to submit an approvable program under CZARA.

**RATIONALE:** In the 1998 conditional approval findings, NOAA and EPA called out specific concerns with the ability of Oregon's existing FPA rules to adequately address road density and maintenance, particularly on so-called "legacy" roads, to attain water quality standards and protect designated uses. In the rationale, NOAA and EPA noted that "'legacy' roads, roads constructed and used prior to adoption of the FPA in 1971 and not used or maintained since, were not required to be treated and stabilized before closure. In some locations, this has resulted in significantly altered surface drainage, diversion of water from natural channels, and serious erosion or landslides."

Oregon has established both regulatory and voluntary measures to address road- associated pollutant impacts to water quality, and has suggested that further additional management measures for roads are not necessary at this time. While NOAA and EPA acknowledge the progress the State has made, as discussed further below, the federal agencies maintain that additional work is needed to ensure the State has adequate additional management measures in place for forestry roads, including legacy roads.

Since 1998, the Board of Forestry has made several improvements to general road maintenance measures to improve water quality. Changes made in 2002 and 2003, included: (1) establishment of a "Critical Locations" Policy for avoiding the building of roads in critical locations such as high hazards landslide areas, steep slopes, or within 50 feet of waterbodies; (2) creation of additional rules to address wet-weather hauling (OAR 629-625-0700), and (3) revision of an existing road drainage rule to reduce sediment delivery (OAR 629-625-0330). These improvements will help reduce sedimentation from roadways. However, the new drainage requirements are triggered only when new road construction or re-construction of existing roads occurs. The rule changes and new policies do not sufficiently address water quality problems associated with "legacy roads" (e.g., roads that do not meet current state requirements with respect to siting, construction, maintenance, and road drainage) or problems associated with a large portion of the existing road network where construction or reconstruction is not proposed.

Oregon proposed to address these legacy road issues and gaps in its FPA rules through voluntary efforts, including restoration and monitoring activities carried out through the voluntary Oregon Plan. For example, in its March 2014 submittal, the State described ODF's

voluntary Road Hazard and Identification and Risk Reduction Project where private and state forestland owners survey their road networks to identify roads that pose risks to salmonid habitat and prioritize roads for remediation. Although Oregon reports that thousands of road miles have been inspected and repaired across the state since the inception of this program in 1997, the State did not indicate the impact the program has had within the coastal nonpoint program management area or how many of these projects addressed active forest roads and roads retired according to current FPA practices versus problems associated with older, legacy roads.

Oregon also noted it has entered into a cooperative agreement with the USDA Forest Service to update the State's geographic information system (GIS) data layer for forest roads. The data layer will help the State conduct a rapid road survey to evaluate and prioritize road risks to soil and water resources. Oregon noted it hoped to begin the survey in 2014. NOAA and EPA encourage the State to move forward with the road survey. However, the federal agencies are not aware if the survey and GIS layer will consider legacy roads or how the state will use the data to direct future management actions.

In addition, the State also discussed it was undertaking a third-party audit in 2014 to assess compliance with the FPA rules governing forest road construction and maintenance among other things. While NOAA and EPA encourage the State to continue to conduct this and other audits to assess compliance with FPA rules, as noted earlier, legacy roads are not subject to FPA rules. Issues resulting from legacy roads would not be observed during this audit unless and general road maintenance issues where those roads are subject to construction or reconstruction is not occurring that would trigger the need to compliance would with the FPA would not be observed during this audit.

The NOAA and EPA recognize that legacy roads are being addressed through voluntary measures, and that legacy roads have been the target of significant landowner investment. However, as noted in the Oregon Coastal Coho Assessment,<sup>1</sup> old roads make up the majority of forest roads, and road inventory data on private land is not widely available. As such, it is not possible to determine the extent to which voluntary efforts have addressed the sedimentation problems and landslide risk posed by the legacy road network.

In addition, as the federal agencies' *1998 Final Administration Changes Memo* states, in order for states to rely on voluntary programs to meet coastal nonpoint program requirements, a state must, among other things: (1) describe the voluntary program, including the methods for tracking and evaluating those programs, the State will use to encourage implementation of the management measures; and (2) provide a legal opinion from its Attorney General asserting the State has adequate back-up enforcement authority for the voluntary measures and commit to exercising the back-up authority when necessary. While the State has provided the federal agencies with a legal opinion detailing the suitability of its back-up authorities, the State has not provided (either in writing or through past practice) a commitment to exercise its back-up authority to require implementation of the additional management measures for forestry roads, as needed. Also, the State has not described specifically how these voluntary efforts have and will continue to address legacy road issues within the coastal nonpoint management area. Nor has the State fully described how it continues to monitor and track the implementation of these measures to address forestry

---

<sup>1</sup> Nicholas J., McIntosh, B. and E. Bowles. 2005. Oregon Coastal Coho Assessment. Coho Assessment Part 3B. Oregon Watershed Enhancement Board and Oregon Department of Fish and Wildlife, Salem, Oregon. 49 pp.

road issues, including legacy roads (not just through one-time compliance audits but through more routine monitoring practices).

Legacy roads remain an issue due to their location and construction. Historic settlement patterns and relative ease-of-construction led early developers to preferentially locate roads in valley bottoms near streams. These roads would often parallel low gradient streams (historically the most productive coho habitat) and cross many tributaries.<sup>2</sup> Prior to modern best management practices, mid-slope roads would often be connected to these valley bottom roads to access harvest units.<sup>3</sup> It is widely recognized that these poorly designed forest roads increase sediment supplied to streams by altering hillslope hydrology, surface runoff, and sediment flux.<sup>4,5,6,7,8</sup> These roads can also become a chronic source of low level sediment over time.<sup>9</sup> The ecological consequences of sediment chronically supplied from roads may be equally or even more detrimental over time than periodic sediment pulses.<sup>10</sup> Furthermore, legacy roads can serve as initiation points for landslides many years (or even decades) after construction.<sup>11</sup> For example, one study found that forestry roads in Oregon built before 1984, have higher landslide rates than those built later.<sup>12</sup>

While ODF's 2002 Sufficiency Analysis found that, except for wet weather road use which the Board has since addressed (see above), complying with the current FPA road best management practices is likely to meet water quality standards, the analysis did not examine the impacts of legacy roads which do not adhere to current forest practices. Oregon's Independent Multidisciplinary Science Team (IMST) did find that:

“Old roads and railroad grades’ on forestlands, sometimes called legacy roads, are not covered by the OFPA rules unless they are reactivated for a current forestry operation or purposes. IMST believes the lack of a mechanism to address the risks presented by such roads is a serious impediment to achieving the goals of the Oregon Plan. A process that will result in the stabilization of such roads is needed, with highest priority

<sup>2</sup> . Nicholas J., McIntosh, B. and E. Bowles. 2005. Oregon Coastal Coho Assessment. Coho Assessment Part 1: Synthesis. Oregon Watershed Enhancement Board and Oregon Department of Fish and Wildlife, Salem, Oregon. 69 pp.

<sup>3</sup> Wemple, B.C., Swanson, F.J., Jones, J.A., 2001. Forest roads and geomorphic process interactions, Cascade range, Oregon. *Earth Surface Processes and Landforms* 26, 191-204

<sup>4</sup> Reid, L. M., Dunne, T., 1984. Sediment production from forest road surfaces. *Water Resources Research* 20(11), 1753-1761.

<sup>5</sup> Luce, C.H., Black, T.A., 1999. Sediment production from forest roads in western Oregon. *Water Resources Research* 35(8), 2561-2570

<sup>6</sup> Wemple, B.C., Jones, J.A., 2003. Runoff production on forest roads in a steep, mountain catchment. *Water Resources Research* 39, doi:10.1029/2002WR001744

<sup>7</sup> Skaugset, A. and M. M. Allen. 1998. Forestry Road Sedimentation Drainage Monitoring Project for Private and State Lands in Western Oregon. Prepared for the Oregon Department of Forestry by the Forestry Engineering Department, Oregon State University, February 20, 1998.

<sup>8</sup> Robison, E.G., Mills K., Paul, J. Dent, L. and A Skaugset. 1999. Storm Impacts and Landslides of 1996: Final Report, Forest Practices Technical Report, vol. 4 Oregon Department of Forestry, Corvallis. 145 pp.

<sup>9</sup> MacDonald, L.H. and D.B.R. Coe. 2008. Road sediment production and delivery: processes and management. *Proceedings of the First World Landslide Forum, International Programme on Landslides and International Strategy for Disaster Reduction*, United Nations University, Tokyo, Japan. pp. 381-384.

<sup>10</sup> Detenbeck, N.E., P.W. Devore, G.J. Niemi, and A. Lima. 1992. Recovery of temperate stream fish communities from disturbance: a review of case studies and synthesis of theory. *Environ. Manage.* 16:33-53.

<sup>11</sup> Oregon Department of Forestry and Oregon Department of Environmental Quality. 2002. Sufficiency Analysis: A Statewide Evaluation of Forest Practices Act Effectiveness in Protecting Water Quality, Oregon Department of Forestry and Oregon Department of Environmental Quality, October 2002.

<sup>12</sup> Oregon Department of Forestry and Oregon Department of Environmental Quality. 2002. Sufficiency Analysis: A Statewide Evaluation of Forest Practices Act Effectiveness in Protecting Water Quality, Oregon Department of Forestry and Oregon Department of Environmental Quality, p. 33, Sessions, (1987), from Sufficiency Analysis. [NEED FULL CITATION]



attention to roads in core areas, but with attention to such roads and railroad grades at all locations on forestlands over time.”<sup>13</sup>

As part of the development process for the Coastal Salmon Restoration Initiative (CSRI) report, which later evolved in to the Oregon Plan for Salmon and Watershed (Oregon Plan), a 1996 National Marine Fisheries Service (NMFS) memo providing the service’s scientific analysis of the draft CSRI report identifies the report’s omission of forestry road-related problems as a serious inadequacy. NMFS indicated that the forest practice rules have no well-defined process to identify problems with older logging roads and railroad grades constructed prior to 1994.<sup>14</sup>

In addition to water quality impacts, sedimentation and erosion from forestry roads have adverse impacts on salmon. For example, logging roads are a source of fine sediments which enter spawning gravel and can lower the success of spawning and recruitment for coho salmon.<sup>15</sup> NOAA National Marine Fisheries Services’ scientific analysis for their Endangered Species Act Section 7 listing for Oregon Coast Coho Salmon, also continues to recognize forestry roads, including legacy roads, as a source of sediment and a threat to Oregon coastal coho salmon. NMFS explained that “existing and legacy [forestry] roads can contribute to continued stream degradation over time through restriction of debris flows, sedimentation, restriction of fish passage, and loss of riparian function.”<sup>16</sup>

Despite the improvements the State has made in addressing forestry roads, NOAA and EPA remain concerned that many forest road networks in Oregon continue to deliver sediment into streams. Although Oregon rightfully notes that some legacy roads may have filled in with trees and other vegetation since being retired from active use and that accessing some of these roads to repair them properly may create more disturbance and potential water quality impacts. While this statement may be accurate in some cases, the State did not provide legacy roads inventory data of the coastal area to support its position. An inventory of all legacy roads and old roads (roads built prior to the 1983 rule changes<sup>17</sup>) would identify the location of the legacy roads, identify where impairments are needed and provide information on effectiveness of any improvements made via its voluntary roads improvement program. Nonetheless....[add something about why we still want OR to make improvements despite this]....

**Comment [AC1]:** Need to acknowledge state’s argument that legacy roads are “heeled” and would be more harm to fix.

The suite of voluntary programs Oregon has described may enable the State satisfy the forestry roads element of this condition. However, as discussed above, additional

<sup>13</sup> Independent Multidisciplinary Science Team. 1999. Recovery of Wild Salmonids in Western Oregon Forests: Oregon Forest Practices Act Rules and the Measures in the Oregon Plan for Salmon and Watersheds. Technical Report 1999-1 to the Oregon Plan for Salmon and Watersheds, Governor’s Natural Resources Office, Salem, Oregon. pp. 47

<sup>14</sup> NOAA National Marine Fisheries Service. 1996. “Analysis of the Oregon Department of Forestry’s (ODF) Most Recent Submission for the State of Oregon’s Coastal Salmon Restoration Initiative”. September 10, 1996 memo from Rowan Baker to Steve Morris and Elizabeth Garr.

<sup>15</sup> Cederholm, C.J., Reid, L.M., Salo, E.O. 1980. “Cumulative Effects of Logging Road Sediment on Salmonid Populations in the Clearwater River, Jefferson County, Washington.” Contribution No. 543, College of Fisheries, University of Washington, Seattle, Washington 98195.

<sup>16</sup> NOAA National Marine Fisheries Service. 2012. Scientific Conclusions of the Status Review for Oregon Coast Coho Salmon (*Oncorhynchus kisutch*). NOAA Technical Memorandum NMFS-NWFSC-118, June 2012, Pg. 78 [http://www.nwfsc.noaa.gov/assets/25/1916\\_08132012\\_121939\\_SROregonCohoTM118WebFinal.pdf](http://www.nwfsc.noaa.gov/assets/25/1916_08132012_121939_SROregonCohoTM118WebFinal.pdf)

<sup>17</sup> Report of the AD HOC Forest Practices Advisory Committee on Salmon and Watersheds to The Oregon Board of Forestry, August 2000. Section B-Forestry Roads, p. B-17.

information is needed at this time. The federal agencies encourage the State to provide a commitment to use its back-up authority to ensure implementation of the forestry road additional management measures, when needed and to move forward with establishing a road survey or inventory program that considers both active, inactive, and legacy roads, including a mechanism for tracking and monitoring implementation of these voluntary measures to carry out identified priority forest road improvements. To support an approvable coastal nonpoint program, the program should establish, among other things, a timeline for addressing priority road issues, including retiring or restoring forest roads that impair water quality, and a reporting and tracking component to assess progress for remediating identified forest road problems. Establishing a roads inventory with appropriate reporting metrics would provide valuable information on State and private landowner accomplishments to improve and repair roads and identify where further efforts are needed. Such an approach could help verify whether the combination of current rules and the Oregon Plan's voluntary measures are effective in managing forest roads to protect streams on a reasonable timeframe.